Evaluation of Lamb Performance and Forage Quality in Rotational Grazing Systems

Yuping Rong
China Agriculture University, China

L. X. Zhao
China Academy of Agricultural Sciences, China

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Evaluation of lamb performance and forage quality in rotational grazing systems

Y .P . Rong[1] *, L .X . Zhao*[2]
[1] *Grassland Institute of China Agriculture University ,Beijing 100094 . E-mail : rongyuping@ cau .edu .cn .* [2] *Grassland Research Institute of China Academy of Agricultural Sciences ,Huhehot 010010*

Key words : grazing intensity ,lamb performance ,forage digestibility ,intake

Introduction Grazing was the dominant way of livestock production in northern china . Rotational grazing method was recently advised to use in northern china . In this experiment crossbred native fine wool sheep and German Merino winter-born lambs , averaging 26 .2kg ,were used to determine the effect of grazing density on average daily gain (ADG) ,forage intake and the forage digestibility during rotational grazing . The study pasture was largely composed of Russian wildrye established in 1989 and reseeded smooth bromegrass and alfalfa established in 1998 .

Materials and methods The pasture was divided into 20 plots with an area of $24 \times 48 m^2$ for each plot . There were 18 grazing plots and 2 ungrazed plots which were used as controls . The stocking rates were 156 .75(LG) ,261 .25(MG) and 339kg/hm^2 (HG) live-weight respectively . The grazing period started from June 5th and lasted for 108d each year . The lambs were weighed approximately every 36days (July 1st ,August 3rd and September 10th) . Animal food quantity intake was measured using a double sample method at the same time intervals as the lamb weighed . Forage apparent digestibility of the livestock intake was estimated by the total feces collection method using 3 lambs . Forage quality indicators measured as percentage of DM included CP (Crude protein) ,NDF (neutral detergent fiber) and ADF(acid detergent fiber) . The following formula was used to compute nutrient apparent digestibility of the forage (Bransby at el . 1988) . $D = \frac{(I-E)}{I} \times 100$

D :Apparent digestibility of the forage nutrient(%) ;I :intake forage nutrient(g) = intake quantity × percentage of forage nutrient (%) ; E :The nutrient quantity in the feces(g) = total feces quantity × the nutrient content in the feces(%) .

Conclusions The results showed that the forage digestibility declined with the stocking rate ,however it decreased much more at the earlier and later stage (Table 1) . With the higher stocking rate ,the average daily gain of the lamb was slow . All these differences became lower during the flourish of forages in July and August . It was obvious that the Russian wildrye pasture could meet the nutrient requirement of the lambs . The light grazing intensity resulted in the highest ADG ,however the moderate grazing intensity could attain both higher ADG per lamb and liveweight production per hectare .

Table 1 *The effects of stocking rate on the forage intake ,digestibility and ADG of the lamb .*

Date	Grazing intensity	Daily intake(g)	Forage apparent digestibility (%)				ADG(g)
			DM	CP	NDF	ADF	
July 1st	LG	1824a	78 .89a	83 .96a	67 .12a	81 .70a	191 .67 a
	MG	1402b	71 .56a	79 .50a	66 .83a	57 .08b	147 .92b
	HG	1354c	66 .30b	75 .57b	52 .22b	40 .59b	116 .18c
Aug . 3rd	LG	2243a	81 .86a	87 .32a	74 .83a	72 .00a	194 .20a
	MG	2257a	82 .68a	87 .68a	78 .48a	74 .09a	205 .31a
	HG	2165b	79 .71a	85 .96a	71 .83a	68 .49a	191 .16a
Sep . 10th	LG	1720a	64 .98a	70 .06a	60 .21a	48 .16a	150 .7a
	MG	1240b	56 .33b	69 .45a	48 .48b	26 .47b	155 .75a
	HG	1050c	53 .01b	70 .71a	39 .61c	8 .40c	141 .95a

Note : The different letter of the same column means significance at 0 .05 levels . ($P < 0.05$) .